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SINGLE SIDED DEAFNESS: ISSUES AND ALTERNATIVES

Single sided deafness (SSD) is a condition in which patient has nonfunctional hearing in one ear and do not clinically benefit from amplification in that ear, while the other ear functions normally. In clinical practice, many patients with SSD are informed that there is no treatment for their condition in any part of the world. The statement is partially true for present situation, till there is evolution in restoration of hearing by technique like gene therapy, stem cell therapy etc in future. The patients has to be informed about the alternatives available today.

The importance and advantage of binaural hearing will be experienced more by people with SSD. Two main advantages of binaural hearing are: ability to determine the location of sound source and ability to detect a target sound at one location in the presence of sounds at other location (cocktail party effect). Therefore, having hearing loss in one ear, it becomes difficult to localise the direction that sounds are coming from. Sound can only be understood by the hearing ear, meaning that all sounds seem to come from that side of the head only. This can make sound localization and speech in noise especially difficult. Additional to this, children experience speech and language delay and difficulty paying attention in school. In the past people with SSD, had only limited options regarding audiologic rehabilitation and often, those living with SSD had been left without a choice or adequate hearing solution suggesting to care of second ear hearing by avoiding ototoxic medication, loud sound. Other way to treat SSD was by rerouting sounds from the bad ear to the good ear.

Generally speaking, previous solutions for SSD have been limited to contralateral routing of signal (CROS) hearing aids and aural rehabilitative strategies, such as preferred listening and seating positions, and noise reduction strategies. CROS hearing aids are available as either "wired" or "wireless." In essence, CROS hearing aids consist of an in-the-ear (ITE) or behind-the-ear (BTE) hearing aid shell, containing a receiver. The receiver unit is placed on the normal ear with an ITE or BTE shell (or ear hook) containing a microphone system located on the deaf ear. The sound is "heard" through the microphone system located on the side of the deaf ear, and sent via a wired or wireless system to the normal ear. This is the old method of hearing rehabilitation with poor compliance as difficult to have hearing aid on normal ear. Better options are now available that is Bone-conduction devices which reroute signals from one side of the head to the other. Patients who are candidates for surgical options can also consider bone-anchored implants. The underlying principle behind bone-anchored hearing systems is osseointegration, the process by which bone cells attach to the titanium implant to form a firm and permanent anchor. The implant and abutment are placed behind the ear to anchor the sound processor, which captures sound waves and converts them into vibrations. These signals are then transfers through an abutment or magnet to an implant, which transfers the vibrations through the skull to the inner ear, bypassing the non-hearing side. Bone-anchored implants also can be used in patients who have a medical contraindication to the use of traditional amplification, such as microtia, atresia, or chronically draining ears. The BONEBRIDGE, an active bone conduction implant system, by Med-El company is also a newer option for individuals with SSD.

CROS and Bone-anchored hearing systems enable only rerouting sounds from the bad ear to the good ear, however, the main difficulties of SSD could not be addressed. That means they provide no actual benefit in sound localization and hearing in noise. Neither the CROS hearing aids nor the bone-anchored hearing systems restore hearing in the deafened ear. Cochlear Implant is the suitable option to make the deaf ear hear and restore the benefit of binaural hearing. All these alternatives are available in Nepal. Therefore instead of saying no treatment for SSD, the patients should be informed about the issues with SSD and alternatives available for hearing restoration with their advantages and disadvantages.